review

Stagetec Aurus

Aimed at offering a more cost-effective implementation of its digital mixing console technology, Stagetec's latest still boasts the system integration that its other products have become admired for. ROB JAMES decides that it's powerful and intuitive.

THE SALZBRENNER STAGETEC MEDIAGROUP consists of a number of companies with activities ranging from equipment manufacture to the provision of outside broadcast facilities. In a bright new factory on the banks of the river Spree, Stagetec Entwicklungsgesellschaft Fur Professionelle Audiotechnik mbH, or Stagetec R&D for short, is the company responsible for producing the Nexus routing systems and the Cantus, Cinetra and now Aurus digital consoles.

Digital mixing consoles all contain the same major building blocks, audio inputs and outputs, digital signal processing and a means of control – the user interface(s). Aurus and the other Stagetec consoles are no different in this respect. However, there are fundamental differences in their architecture and construction when compared with a more 'conventional' approach. There is still a tendency to think of mixing consoles as the centrepiece of audio work with all the ancillary equipment dancing attendance. Natural enough since the control surface is the most visually impressive piece of hardware, however, shifting this viewpoint can bring many benefits.

In the video world, matrices ranging from small to extremely large-scale are common, routing both video and audio signals. With the addition of computer control extremely complex patches can be set-up then stored and recalled, at the touch of a button.

Stagetec's Nexus routing systems go a long way beyond a simple standalone router. These units are modular and come in a variety of sizes accommodating up to 60 optional modules. Format conversion is inherent and largely transparent and sample rate conversion is an option on many digital audio interface boards. Other forms of data can be routed, such as serial control, GPIs, intercoms, power amplifier control, etc. Video routing is not directly supported but custom software can enable Nexus systems to work in tandem with 3rd party video routers.

A Nexus base device is a compact rack-mounting unit available in various sizes, depending on the number of I-O modules required. An enormous range of input and output modules is available including Stagetec's 28-bit 'Truematch' mic level A-D convertors. Each base device can work as a standalone router but the real power begins to become apparent once base devices are interconnected by 250Mbps optical fibre 'cables'. Connections can span distances up to 1500 metres in multi-mode and 70km (yes, kilometres!) in the optional mono-mode.

A pair of fibres carries input and output signals respectively. Time Division Multiplexing (TDM) is employed with a total of 256 time slots (i.e. separate signals per base device). Several base devices can be networked together in a variety of topologies, but for more complex systems it is more convenient (and more cost effective) to use a Nexus Star router. This is connected to all the base devices and enables signals to be routed to and from anywhere in the system. Control computers (ordinary PCs) can be connected to any base device or the Nexus Star to programme and control the entire system although, once programmed, hardware control panels may be all that is required. Obviously, security and management functions are provided in the graphical control software to prevent accidents.

By now you may be wondering what all this has to do with an audio mixing console. Simply this, Aurus is integrated with a Nexus Star router. The processing and control boards are fitted into a Nexus Star rack unit. The resulting synergy between router and console has profound operational significance in many fields of application but especially in theatre, broadcast and PA. To take just one example, providing a split feed for recording becomes a trivial exercise with a multitude of options as to what the split can carry. The console configuration computer can operate the Nexus router and commonly used Nexus parameters can be attached to console buttons. Since the Nexus provides the audio I-O for the console this can include microphone preamp control and sample rate convertor settings.

Two consoles can reside within a single Nexus Star rack, subject to a maximum of 300 input channels and 256 buses (although not at the same time). The two consoles can be independent or interact in several possible ways.

The DSP hardware employs eight 'Hammerhead' SHARC processors and a single board provides 24 full channels and 128 buses. Internal calculation is in 40-bit floating point, so it is very difficult to clip signals within the console. Multichannel operation was designed in from the start. Aurus can directly handle sources and output formats up to 8 channels wide and has three inserts for external cinema surround processors.

There are several possibilities for dealing with multichannel sources. Each channel can be assigned to an individual strip and the strips linked, or a single surface strip can control hidden linked strips, VCA style, or a single strip can be used as a multichannel control complete with appropriate metering and linking options within the strip. Auxes can also be multichannel with panning, and pan settings may be copied from the channel if required.

The control surface is built up in increments of 8 input channels. In the centre section, monitor and graphics tablet panels and the assignable panel, with full channel controls and motorised surround panner joystick, have the same dimensions as the input channel fader and multifunction panels.

A configuration computer running Windows is integrated into the console but with all the noisy bits remotely sited in the server PC attached to the audio processor rack. The control surface is silent with no fans or other mechanical noise producing

components. User configurations can be stored and recalled at any time via the project management features. This computer is not used when operating the console, it is purely for housekeeping. Once a project is defined, only the maximum bus mode is fixed, other configuration aspects can be changed, almost instantly, while mixing.

The console control computers use Linux for speed and reliability. The surface connects to the Nexus Star via a fibre-optic cable running at 1Gbit/sec over a distance of up to 800m, although a mono-mode transceiver can be specified for considerably greater distances. This single fibre carries all the console's control signals and audio signals for two talkback mics, two pairs of headphones, meters and near field speakers.

One of the most impressive aspects of this console design is the way the TFT screens are used. Sitting at the desk there is little or no sense of looking at a bunch of screens. The graphic design is so effective it is just like looking at conventional LED bargraphs and routing displays. Only when a control is touched comes the reminder (in the form of useful information) that these are in fact, computer display screens. The per channel graphic display of the current EQ curves is a real bonus and neatly gets around the unavoidable problem of knobs obscuring the LED 'fan' indicators on the surface. I found many of the common operations undertaken while mixing completely intuitive.

Complete configuration of a console with this level of versatility is necessarily complex but it is perfectly possible for senior operators to design configurations suitable for more junior or less experienced people to operate. This can be essential for theatre and broadcast and very useful where freelance engineers are employed. Two operator configurations are possible with a degree of separation between the two ends of the surface.

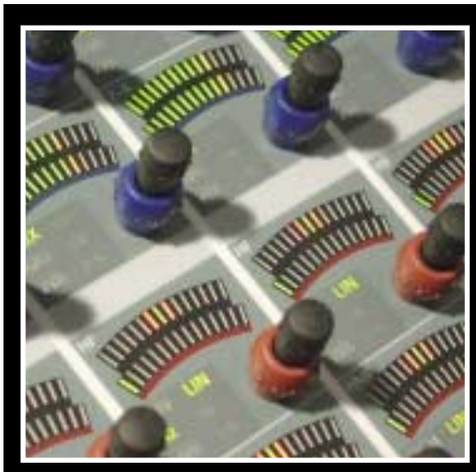
Large consoles are notoriously difficult to price due to the multitude of possible configurations and options but Aurus is likely to work out around 25% cheaper than an equivalent Cantus with prices from around Euro 300,000 upwards and an average specification console costing around Euro 400,000. Aurus does not in any sense replace the Cantus, which has extensive control surface module options and even greater configurability. Cantus also has the considerable advantage of a smaller front to back dimension for applications where space is at a premium.

Aurus is being promoted as 'The Direct Access Console'. In other words, one of the major design criteria was to minimise button presses and paging of controls when mixing and to provide a flatter learning curve. The aim being to make the mixing experience more immediate and closer in feel to an analogue board without sacrificing any of the benefits a digital design confers.

To this end Stagetec has employed dual concentric shaft-encoders to double the number of physical controls that can be accommodated in a given space. With 11 of these per channel for a total of 22 rotary controls, Aurus certainly offers an unusual degree of tangible control thanks to a relatively fixed relationship between knobs and functions. The knobs are sculpted with spiky little nodules around the periphery. They look a little strange at first but the feel is excellent and natural. Uniquely, the upper knob is touch sensitive and a mechanical switch. Touch sensitivity is used to call the current values of the controlled parameter to the screen as well as automation. The switch function depends on the specific control but for example, it is used to change a knob's function from frequency to Q in an equaliser.

With any new console of this complexity there is always a lot of detail to be finalised. Often this only happens after the first consoles have been delivered and the early adopters have come up with their own ideas. Aurus is no exception and some aspects of the automation are not yet fixed. However, it is already clear that snapshot and dynamic automation are comprehensive and have many of the more esoteric features required for successful operation at the highest level in production and live performance.

The worldwide market for consoles in this price bracket is extremely competitive and numbered in hundreds rather than thousands. Simply to consider Aurus as just another high-end console would completely miss the point. Its symbiosis with the Nexus routing system makes a compulsive argument for a more holistic approach to audio. Multiple control surfaces can combine with other components from the Nexus range and other Stagetec consoles. For broadcasters this can mean the entire audio chain from origination all the way through to transmission routing. Equally, this approach is applicable to fulfilling the needs of theatres and concert halls and even the largest exhibition and trade fair venues.

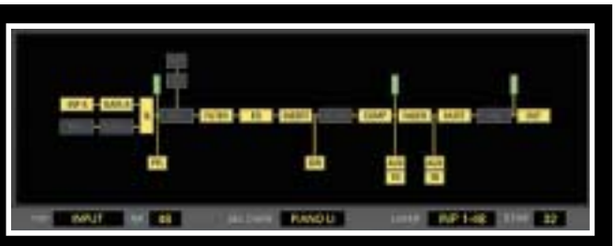


Physical construction of the Aurus control surface is innovative. It is housed in a monocoque case. The sheet material is an aerospace corrugated aluminium alloy, perhaps 5mm thick and very light. The supplier cuts this on CNC machines using a water/sand (abrasive) jet as the cutting element. The panels are glued together by Stagetec using a two-part aerospace adhesive. An alloy 'torque tube' provides extra rigidity. These construction methods make for a light, rigid console.

There is no backplane or motherboard in the conventional sense. Modules are connected to the Surface Input unit via ribbon cables. Thanks to this, and the slim design of the modules themselves, the control surface is very shallow at the front, rising gently beyond the fader section then more steeply to the top of the relatively high upstand. The height is required to accommodate the TFT screens, which replace conventional meters and indicators. The console is shallow enough to be thoroughly practical when desk-top mounted or can be supplied with legs for standalone use.

Despite the refreshingly large number of rotary controls, switch count in the channel strips is considerably reduced, when compared with other designs, and non-existent in the all-important area where the majority of the knobs are situated. This makes for a more streamlined look and intuitive operation without sacrificing any functionality.

This is a very approachable console. It can be set up to appear deceptively simple to casual users while offering serious power-user features for those who need them. Eleven Aurus consoles have already found homes and the first units will be delivered in September. When these live up to their promise I suspect there will be many more. ■



Two forms of input channel are available, Full and Short. Both types have dual inputs (in whatever format is selected, Mono, Stereo, 5.1, etc.) that can be used simply as alternatives, or to work in an in-line manner, or the A and B inputs may be summed at the input to the channel with individual gain settings. Input A can be phase reversed. There is a metering point, PFL, Solo, Direct Out, Track Send pre and post fader and Aux send pre and post fader, multichannel panning and outputs to bus(es).

The Full channel adds expander/gate, sidechain filter, key input, filters, 6-band EQ, insert with wet/dry setting, delay, compressor and limiter. The metering point key input, PFL, Solo, aux send and track send can all be placed at various positions within the signal chain and signals may be monitored from a variety of points. The 'Short' channels are frugal with DSP and are useful for mixes, groups and effects returns.

Dynamics and equalisation settings can be stored and recalled to and from libraries.

PROS	**Far more than 'just a console'; clean, approachable design; thoughtful surround features.**
CONS	**Price, when seen as a 'standalone' console; upstand may be too high for some applications.**

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